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**PHOTOGRAPHIC INTERPRETATION REPORT**

**AIRCRAFT ENGINE PLANT 154  
VORONEZH, USSR**

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## AIRCRAFT ENGINE PLANT 154 VORONEZH, USSR

### SUMMARY/CONCLUSIONS

This report on the chronological development of Aircraft Engine Plant 154, Voronezh, USSR, is one of a series on Soviet missile production and test facilities to provide data which can be used in the evaluation of the capability of the Soviet Union to develop and produce aerospace and missile systems. Although there is no direct photographic evidence to associate this plant with the Soviet missile production program, the overall size and capability of the plant as well as its proximity to the Voronezh Rocket Engine Test Facility makes such an association a possibility. The original plant size of approximately 1.2 million square feet of roof coverage has been more than doubled since World War II.

### INTRODUCTION

This report on the chronological development of Aircraft Engine Plant 154 (51-38N 39-11E), Voronezh, USSR (Figure 1), is based on information compiled from all available photography of the plant from [redacted]. Plant 154 is located in the western suburbs of Voronezh, approximately 4 nautical miles (nm) north of the Voronezh Rocket Engine Test Facility (51-35N 39-10E). It is one of two major aircraft plants located in this city; the second is Airframe Plant 64 in the eastern suburbs. Transportation services include an extensive network of rail spurs, good all-weather roads, and the nearby Voronezh Airfield East.

Aircraft Engine Plant 154 was first observed in the early 1940's on German prestrike, strike, and poststrike photography. This photography revealed that a considerable amount of damage had been caused by German aerial bombardment during World War II. When next seen on

[redacted] photography of 1960 (Figure 2), many new structures had been completed and older structures enlarged. Since World War II, the original size of approximately 1.2 million square feet of roof coverage has been more than doubled by the repair of damaged facilities, erection of new buildings, and expansion of many of the older buildings (Figure 3).

Although there is no photographic evidence to associate this plant with the Soviet missile program, the overall size of the plant as well as its proximity to the Voronezh Rocket Engine Test Facility make such an association a possibility. The building-by-building construction history of the plant is shown in Figure 4; chronological details and interpretations of the basic functions of the structures in the plant are given in Table I.

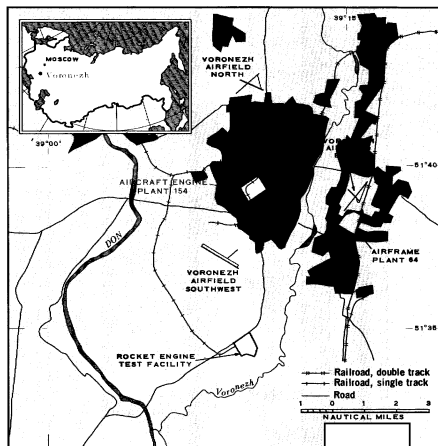


FIGURE 1. LOCATION MAP.

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### HIGHLIGHTS OF THE DEVELOPMENT OF AIRCRAFT ENGINE PLANT 154

#### 1943

When Aircraft Engine Plant 154 was first observed on [redacted] photography during 1943, it consisted of a large aircraft-engine test building (Item 31), a large assembly/shop building (Item 30), 12 shop buildings of various sizes (Items 39, 40, 41, 42, 43, 52, 54, 55, 56, 57, 65, and 66), a forge/foundry (Item 38), 3 administration buildings (Items 29, 37, and 78), and a small utility building (Item 51). These structures contained approximately 1,206,100 square feet of roof coverage.

#### 1960

[redacted] provided the first photographic coverage of Plant 154 since [redacted]. This photography revealed that a number of new structures had been completed and that the 3 older administration buildings (Items 29, 37, and 78) had been enlarged. The following buildings, containing approximately 80,075 square feet of roof coverage, were completed by [redacted]: a shop building (Item 26), 3 warehouses (Items 48, 59, and 60), 2 small administration buildings (Items 58 and 75), 3 small utility buildings (Items 24, 25, and 76), a small pump house (Item 32), and a probable greenhouse (Item 79). [redacted] photography of 1960 also revealed 2 large assembly/shop buildings (Items 28 and 35) in an early stage of construction. Three other shop buildings (Items 6, 7, and 64) were in a midstage of construction and 2 small utility buildings (Items 5 and 8) were in an early stage of construction. A large addition to a shop building (Item 39) was nearing completion and work was in progress on a large addition to the engine test building (Item 31).

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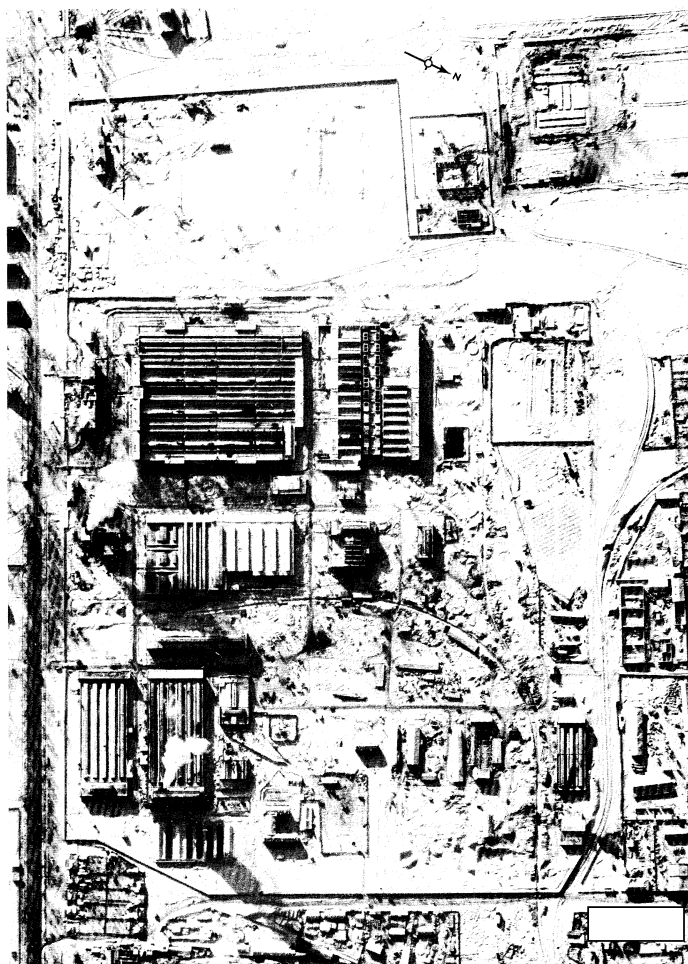


FIGURE 2. AIRCRAFT ENGINE PLANT 154, VORONEZH, USSR.



FIGURE 3. VORONEZH PLANT 154.

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Table 1. Aircraft Engine Plant 154, Voronezh, USSR (Item numbers are keyed to Figure 4)

Table 1. Average August 1966 shipyard construction schedule																
Item	Probable Function*	Dimensions (ft)**		Roof Cover (sq ft)	Date First Observed	Date Complete	Comments	Item	Probable Function*	Dimensions (ft)**		Roof Cover (sq ft)	Date First Observed	Date Complete	Comments	
		L	W							L	W					
1	Admin bldg	Irregular	25	8,750				44	Bldg w/c	--	--	--			Very early stage of construction; definite size or configuration undetermined	
2	Admin bldg	Irregular	20	7,950				45	Utility bldg	Irregular	--	5,675				
3	Utility bldg	20	15	--	500			46	Utility bldg	Irregular	--	1,600				
4	Utility bldg	70	30	--	2,100			47	Shop/warehouse	160	80	12,600				
5	Utility bldg	25	25	--	625			48	Warehouse	100	45	--	4,500			
6	Shop bldg	Irregular	20, 50	23,400				49	Shop/warehouse	Irregular	15	20,275				
7	Shop bldg	Irregular	--	7,100				50	Transshipment bldg	Irregular	25	87,825				
8	Utility bldg	25	25	--	625			51	Utility bldg	40	30	--	1,200			
9	Cooling towers	--	--	--	--			52	Shop bldg	Irregular	20, 35, 60	32,875			Expansion began in [ ] and was completed when seen in [ ]	
10	Utility bldg	60	30	--	1,800			53	Utility bldg	80	25	--	2,250			
11	Utility bldg	40	20	--	800			54	Shop bldg	Irregular	25	128,125			Expanded between [ ] and [ ]	
12	Shop bldg	110	100	35	11,000			55	Shop bldg	600	240	50	144,000			Expanded between [ ] and [ ]
13	Utility bldg	Irregular	--	3,050				56	Shop bldg	225	195	50	43,975			Expanded between [ ] and [ ]
14	Utility bldg	55	20	--	1,100			57	Shop bldg	Irregular	30	27,500			Expanded between [ ] and [ ]	
15	Shop bldg	180	90	--	16,200			58	Admin bldg	95	40	--	3,800			Expanded between [ ] and [ ]
16	Utility bldg	Irregular	--	2,500				59	Warehouse	Irregular	--	5,175				Expanded between [ ] and [ ]
17	Shop bldg	Irregular	--	5,000				60	Warehouse	155	50	--	7,750			
18	Shop bldg	60	40	--	2,400			61	Utility bldg	40	30	--	1,200			
19	Warehouse	Irregular	--	4,425				62	Utility bldg	90	40	--	3,600			
20	Warehouse	80	15	--	1,250			63	Utility bldg	50	30	--	1,500			
21	Warehouse	90	25	--	2,250			64	Shop bldg	Irregular	--	46,525				Expanded between [ ] and [ ]
22	Utility bldg	50	25	--	1,250			65	Shop bldg	325	120	20, 30	30,000			
23	Shop bldg	Irregular	--	5,700				66	Shop bldg	Irregular	--	12,700				
24	Utility bldg	55	20	--	1,100			67	Bldg w/c	--	--	--				
25	Utility bldg	Irregular	--	2,500				68	Warehouse	130	40	--	5,200			
26	Shop bldg	200	50	15, 30	10,000			69	Shop bldg	75	50	--	3,750			
27	Admin/engineering bldg	430	60	70	25,500			70	Utility bldg	30	20	--	600			
28	Assembly/shop bldg	1,005	750	40	753,750			71	Warehouse	130	20	--	2,600			
29	Admin bldg	Irregular	40	17,325				72	Warehouse	20	15	--	300			
30	Assembly/shop bldg	Irregular	35	437,725				73	Utility bldg	35	25	--	875			
31	Engine test bldg	Irregular	30	254,500				74	Shop bldg	235	40	--	9,400			
32	Pumphouse	30	30	--	900			75	Admin bldg	80	20	--	1,600			
33	POL area	--	--	--	--			76	Utility bldg	40	30	--	1,200			
34	POL tank	--	--	--	--			77	Utility bldg	90	25	--	2,250			
35	Assembly/shop bldg	380	360	40	136,800			78	Admin bldg	Irregular	50	11,475				Expanded between [ ] and [ ]
36	Spray pond	145	105	--	--			79	Greenhouse	Irregular	--	29,950				
37	Admin bldg	Irregular	--	8,350				80	Shop bldg	125	75	--	9,375			
38	Forge/foundry	Irregular	--	16,450				81	Utility bldg	75	40	--	3,000			
39	Shop bldg	Irregular	20	231,500				82	Utility bldg	30	30	--	900			
40	Shop bldg	110	95	35	13,200			83	Utility bldg	30	20	--	600			
41	Shop bldg	Irregular	--	7,300				84	Utility bldg	80	25	--	2,000			
42	Shop bldg	Irregular	30	33,600				85	Utility bldg	90	40	--	3,600			
43	Shop bldg	Irregular	25	14,550				86	Shop bldg	110	100	--	14,000			

\*Items 1 through 8 and Items 77 through 86 have been included in the total roof coverage for Plant 154 due to their proximity to the plant, but may not be directly associated with its production activities.

\*\*Horizontal dimensions are accurate to within ± 5 ft or 5%, whichever is greater, and vertical dimensions are accurate to within ± 10 ft, whichever is greater.

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## 1962

The first [ ] photography of Plant 154 was obtained in [ ] and it provided the first coverage since [ ]. A small shop building (Item 12) was first observed on this photography, which also revealed the completion of 3 shop buildings (Items 6, 7, and 64) and 2 utility buildings (Items 5 and 8), first noted under construction in [ ]. The additions to the engine test building (Item 31) and a large shop building (Item 39), which were seen under construction in [ ], were completed by [ ]. Two large assembly/shop buildings (Items 28 and 35), also first seen under construction in [ ], were completed when seen on [ ]. These structures and additions accounted for approximately 819,475 square feet of additional roof coverage. A large transshipment building (Item 50), 2 shop/warehouses (Items 47 and 49), 3 utility buildings (Items 45, 46, and 51), and the further expansion of a shop building (Item 64) were observed in an early stage of construction in [ ].

## 1963-1964

[ ] coverage of the plant during 1963 was of poor interpretability and, when the plant was next observed on [ ] photography of good interpretability in [ ], 12 new structures were seen to have been completed. The new structures were 2 small shop buildings (Items 69 and 80), 2 warehouses (Items 68 and 71), 7 utility buildings

(Items 70, 73, 81, 82, 83, 84, and 85), and a guardhouse (Item 72). A shop/warehouse (Item 49), 3 utility buildings (Items 45, 46, and 51), and a large transshipment building (Item 50), first seen under construction in [ ], were also completed by [ ]. Two shop buildings (Items 17 and 74) and 3 utility buildings (Items 11, 13, and 14) were under construction and the expansion of 2 shop buildings (Items 54 and 57) was observed in [ ]. Between [ ] 2 shop buildings (Items 18 and 23), 3 warehouses (Items 19, 20, and 21), 2 administration buildings (Items 1 and 2), 5 utility buildings (Items 3, 4, 10, 16, and 22), a bank of 5 cooling towers (Item 9) and the extension of a warehouse (Item 59) were completed. A shop/warehouse (Item 47), which had been under construction since [ ], was completed by [ ]. The construction of a small utility building (Item 61) and the expansion of a shop building (Item 56) were first observed in [ ]. Approximately 208,050 square feet of roof coverage was completed during the 1963-1964 period.

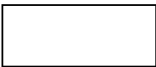
## 1965-1967

Completed by [ ] were a small utility building (Item 61) and the first addition to a shop building (Item 56), both of which had been under construction since [ ]. A shop building (Item 74), first seen under construction in [ ], was also completed by [ ] and footings for the expansion of the large assembly/shop building (Item 28) were observed for the first time.

Two shop buildings (Items 17 and 86), 3 utility buildings (Items 11, 13, and 14), and the expansion of a shop building (Item 54), first seen under construction in [ ], were completed by [ ]. Expansion of another shop building (Item 55) was also first evident on [ ] photography. [ ] the expansion of a shop building (Item 57), which began in [ ], was completed, and construction of a utility building (Item 53) and a large administration/engineering building (Item 27) were first observed. By [ ] the utility building (Item 53) and the expansion of a shop building (Item 58) were completed, and construction of a third addition to another shop building (Item 64) was apparent. On photography of [ ] a small unidentified building (Item 67), a shop building (Item 15), a utility building (Item 62) and expansion of two more shop buildings (Items 52 and 56) were observed under construction on photography of [ ]. When observed on the latest [ ] photography of [ ], all of these structures were completed, except for the unidentified building. This photography also revealed that expansion of the plant was continuing. A new building (Item 44) was observed in an early stage of construction, and work was continuing on the large assembly/shop building (Item 28) and on the administration/engineering building (Item 27). The small unidentified building (Item 67) was still in an early stage of construction. Between [ ] approximately 510,350 square feet of roof coverage was added to the plant. As of [ ] the total roof coverage was approximately 2,825,050 square feet.

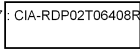
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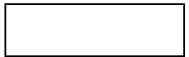


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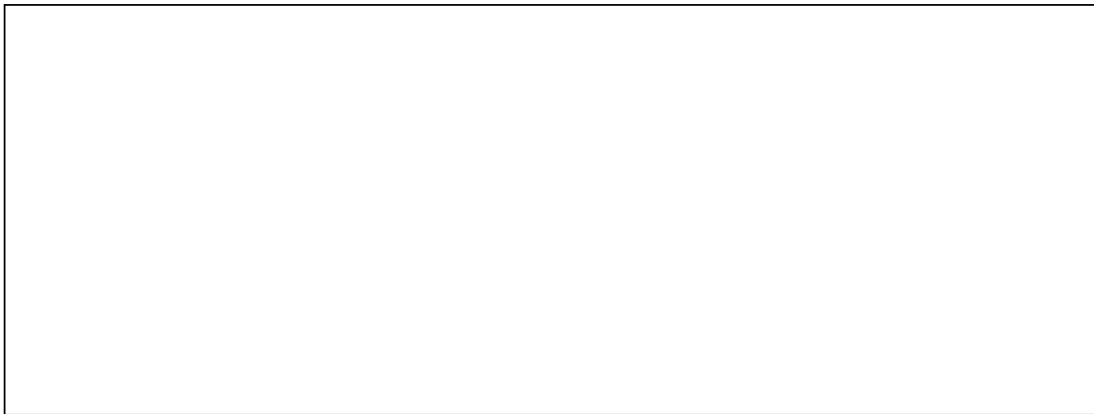


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**REFERENCES**



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**MAPS OR CHARTS**

ACIC. US Air Target Chart, Series 200, Sheet 0234-3

**REQUIREMENT**

CIA. C-DI3-82,973

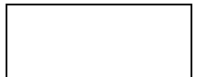
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